107 (28) (28) (28)

Nos. 07-588, 07-589 and 07-597

Supreme Court, U.S.
FILED
OCT 6 - 2008
OF THE CLERK

In The
Supreme Court of the United States

ENTERGY CORPORATION, *Petitioner,*

v.

ENVIRONMENTAL PROTECTION AGENCY, *et al.*, *Respondents.*

B563

PSEG FOSSIL LLC, *et al.*, *Petitioners,*

v.

RIVERKEEPER, INC., *et al.*, *Respondents.*

UTILITY WATER ACT GROUP, *Petitioner,*

v.

RIVERKEEPER, INC., *et al.*, *Respondents.*

On Writs Of Certiorari To The United States Court Of Appeals For The Second Circuit

AMICUS CURIAE BRIEF OF VOICES OF THE WETLANDS AND COASTAL ALLIANCE ON PLANT EXPANSION IN SUPPORT OF RESPONDENTS

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STATE CASES

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40 C.F.R. § 122.29(b)(1) 21

66 Fed. Reg. 29,046 (May 29, 2001) 8

66 Fed. Reg. 65,256 (Dec. 18, 2001) 21, 22

69 Fed. Reg. 19,974 (Apr. 15, 2004) 8

69 Fed. Reg. 41,576 (July 9, 2004) 21, 22

73 Fed. Reg. 1,986 (Jan. 1, 2008) 8

73 Fed. Reg. 2,999 (Feb. 12, 2008) 10

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AGENCY REPORTS, RESOLUTIONS, AND DECISIONS

Cal. Energy Commission, *Comments on SWRCB Scoping Document and Proposed Statewide Policy on Clean Water Act State Water Resources Control Board* (Sept. 26, 2006), *available at* http://www.energy.ca.gov/siting/documents/2006-09-25_LETTER_TO_SWRCB.PDF 7, 11, 14, 15

Cal. Energy Commission Staff Report, *Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants* (June 2005), *available at* http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF 4, 5, 8, 11, 12

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Cal. Energy Commission Final Staff Report, *2007 Environmental Performance Report of California's Electrical Generation System* (Jan. 2008), *available at* http://www.energy.ca.gov/2007publications/CEC-700-2007-016/CEC-700-2007-016-SF.PDF 5, 7, 16, 17, 23

Cal. Energy Commission, Prepared by Moss Landing Marine Laboratories, *Understanding Entrainment at Coastal Power Plants: Informing a Program to Study Impacts and Their Reduction* (2008), *available at* http://www.energy.ca.gov/2007publications/CEC-500-2007-120/CEC-500-2007-120.PDF.....6, 10

Cal. Energy Commission, *Commission Decision on Application for Certification, Moss Landing Power Plant Project,* Docket No. 99-AFC-4 (Nov. 2000), *available at* http://www.energy.ca.gov/sitingcases/mosslanding/documents/index.html#commission 24

Cal. Energy Commission, *Biological Resources Errata to Final Staff Assessment* (June 19, 2000), *available at* http://www.energy.ca.gov/sitingcases/mosslanding/documents/index.html#commission 25, 26

Cal. Energy Commission, *3rd Revised Presiding Member's Proposed Decision for Morro Bay Power Plant Project,* Docket No. 00-AFC-12 (June 2004), *available at* http://www.energy.ca.gov/sitingcases/morrobay/documents/index.html#commission 27

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Cal. Ocean Protection Council, *California's Coastal Power Plants: Alternative Cooling System Analysis* (2008), *available at* http://resources.ca.gov/copc/CCPP_ACSA.htm 4, 15, 18

Cal. Ocean Protection Council and State Water Resources Control Board, *Electric Grid Reliability Impacts from Once-Through Cooling in California* (2008), *available at* http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf 17, 18, 23

Cal. State Water Resources Control Board, *Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (Mar. 2008), *available at* http://www.waterboards.ca.gov/plans_policies/docs/coastal_estuarine/scope_doc031031.pdf 6, 7, 11, 14

Cal. Regional Water Quality Control Board, *Draft Waste Discharge Requirements Order No. R3-2004-0023, NPDES Permit No. CA 0050610, Attachment 3* (Dec. 2, 2004), *available at* http://www.swrcb.ca.gov/rwqcb3/Facilities/DukeEnergy/DukeMB.htm 27, 28

National Marine Fisheries Service, *California Sea Lion (Zalophus californianus californianus): U.S. Stock* (2003) 11

National Marine Fisheries Service, *Harbor Seal (Phoca vitulina richardsi): California Stock* (2005) 11

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Resolution by the California State Lands Commission Regarding Once-Through Cooling in California Power Plants (Apr. 17, 2006), *available at* http//www cacoastkeeper.org/assets/pdf/SLC_Resolution_OTC.pdf 13

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JOURNAL PUBLICATIONS

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David R. Schiel, John R. Steinbeck, & Michael S. Foster, *Ten Years of Induced Ocean Warming Causes Comprehensive Changes in Marine Benthic Communities*, 85 ECOLOGY 1833 (2004) 5

F. J.-P. Briand, *Effects of Power Plant Cooling Systems on Marine Phytoplankton*, 33 MARINE BIOLOGY 135 (1975) 8

MARK DENNY, HOW THE OCEAN WORKS: AN INTRODUCTION TO OCEANOGRAPHY, Princeton Univ. Press (2008) 8

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Sebestián R. Rodriguez, F. Patricio Ojeda, & Nibalso C. Inestrosa, *Settlement of Benthic Marine Invertebrates*, 97 MARINE ECOLOGY PROG. SER. 193 (1993) 9

INTEREST OF *AMICI CURIAE*[1]

Amici curiae Voices of the Wetlands and Coastal Alliance on Plant Expansion are community-based non-profit organizations working to protect California's coastal ecosystems from the impacts of "once-through cooling" operations. Over the past several years, *Amici* have participated extensively in the Clean Water Act permitting processes for individual coastal power plants engaged in once-through cooling and have been active in ongoing state-level initiatives to address the impacts of such cooling systems on California's coastal resources. Voices of the Wetlands participated in the administrative process for the first major "repower" of a coastal electric generating facility, at Moss Landing, and subsequently litigated the interpretation of Section 316(b), including specifically the use of cost-benefit analysis. That case is now pending before the California Supreme Court. Coastal Alliance on Plant Expansion participated as a formally designated interested party in a multi-year administrative site license process before the California Energy Commission for the proposed repowering of the Morro Bay Power Plant and has closely followed the facility's intermittent Clean Water Act permitting and Section 316(b) compliance process

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[1] All parties have consented to the filing of this brief in letters that are on file with the Clerk. Pursuant to S. Ct. Rule 37.6, Counsel for *Amici* state that no counsel for a party authored this brief in whole or in part and no person or entity other than *Amici* or their counsel made a monetary contribution to the preparation or submission of this brief.

before the California Regional Water Quality Control Board for the Central Coast. Both organizations also have provided input to the California State Water Resources Control Board, the California State Lands Commission, and the California Ocean Protection Council as these agencies attempt to develop and promote more ecologically protective standards for cooling water systems used by California's large fleet of coastal power plants. Thus, *Amici* offer a unique citizen perspective on the implementation of Section 316(b) and the use of cost-benefit analysis in determining facility compliance along the California coast.

SUMMARY OF ARGUMENT

With over a thousand miles of vulnerable coastal habitat and an aging fleet of 21 coastal power plants, California has become a laboratory for implementing Section 316(b) of the Clean Water Act. As state regulators grapple with both individual facility permitting decisions and the development of comprehensive statewide guidance to protect coastal ecosystems, California has learned three valuable lessons. First, the State's large "once-through cooling" fleet takes a significant toll on California's coastal resources and has contributed to the precipitous decline in marine fish populations over the last several decades. Second, with careful planning, it is feasible to convert this obsolescent fleet to commercially-available alternative cooling

technologies as plants modernize and repower[2] over the next decade, without significantly impairing electricity grid reliability. And third, because the Environmental Protection Agency ("EPA") classifies even entirely new replacement power plants as "existing facilities," the cost-benefit exemption allowed by the Phase II Rule effectively negates the technology-forcing intent of Section 316(b). Thus, at least in California, there is no merit to the arguments, advanced by several briefs filed in this case, that site-specific cost-benefit analysis is necessary to keep the lights turned on or that such an approach is consistent with Congress' intent in crafting the Clean Water Act.

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[2] The California Energy Commission uses the term "repower" to mean the replacement of existing generating capacity with new generating facilities at the same site. In many cases, repowering along the California coast will involve total demolition of all existing structures and their replacement with state-of-the-art generating capacity. These old sites remain valuable, however, due to their location and existing connection to the electricity transmission system.

ARGUMENT

I. THE CONTINUED USE OF ONCE-THROUGH COOLING BY CALIFORNIA'S COASTAL POWER PLANT FLEET DEGRADES MARINE RESOURCES AND ESTUARINE ECOSYSTEMS.

The California coastline hosts 21 once-through cooling ("OTC") power plants with the capacity to use roughly 17 billion gallons of cooling water every single day.[3] The lead state agency involved in permitting power plants equates the use of such large volumes of water to a total habitat production loss of over 10,800 acres.[4] Cal. Energy Commission Staff Report,

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[3] Not all of these plants currently operate at full capacity, mostly due to market conditions and facility inefficiencies. *See* Cal. Ocean Protection Council, *California's Coastal Power Plants: Alternative Cooling System Analysis* ("*OPC Feasibility Study*") at 1-6 (2008), *available at* http://resources.ca.gov/copc/CCPP_ACSA.htm (noting that average age of fossil fuel facilities along the California coast is 40 years and explaining that due to inefficiencies, many of these plants are now used only for peak load demands). As discussed below, however, because there is a continuing need for local generation capacity in the highly populated coastal areas of California, many of these facilities have sought to repower by replacing their basic generating units with new infrastructure on the same site. Thus, while recent reductions in annual operating hours have somewhat reduced the environmental impacts of coastal OTC plants, the potential for ecological harm remains high as the fleet modernizes and repowers.

[4] Total habitat production loss is a measure that attempts to equate the ecological impacts of OTC intakes to an equivalent amount of habitat destruction in similar coastal estuaries. Thermal discharges from OTC plants, regulated under Section 316(a), also

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Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants ("*CEC 2005 Report*") at 30 (June 2005).[5] Most of California's OTC plants are located within bays and coastal estuaries, where impacts can be particularly severe due to the high biological productivity of these ecosystems and the concentration of OTC plants within them. Cal. Energy Commission Final Staff Report, *2007 Environmental Performance Report of California's Electrical Generation System* ("*CEC 2007 Report*") at 46-47 (Jan. 2008).[6]

Based on sporadic studies at individual power plants, the California State Water Resources Control Board ("State Water Board")[7] has very roughly estimated that

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have negative impacts on the coastal environment. In fact, researchers at Moss Landing Marine Labs have used the Diablo Canyon OTC outfall to examine how species composition changes in response to warming oceans and have found that there are statistically significant shifts in species abundance adjacent to the plant's thermal discharges. David R. Schiel, John P Steinbeck, & Michael S. Foster, *Ten Years of Induced Ocean Warming Causes Comprehensive Changes in Marine Benthic Communities*, 85 ECOLOGY 1833, 1835 (2004).

[5] *Available at* http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF.

[6] *Available at* http://www.energy.ca.gov/2007publications/CEC-700-2007-016/CEC-700-2007-016-SF.PDF.

[7] The State Water Board sets water policy in California and, along with the nine Regional Water Quality Control Boards ("Regional Water Boards"), implements the federally delegated Clean Water Act program. In addition to ensuring compliance with Section 316(b) and issuing federal permits, the State and

(Continued on following page)

over 9 million organisms are impinged and 79 billion are entrained each year by California's coastal power plant fleet. Cal. State Water Resources Control Board, *Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* ("*State Water Board Scoping Document*") at 12-16 (Mar. 2008).[8] These totals, moreover, very likely underestimate impacts by a significant amount because many existing monitoring studies only measured for particular commercially-valuable fish species, most did not measure for invertebrates (abalone, crab, etc.), and virtually none measured for phytoplankton (microscopic drifting plant species). Indeed, an independent technical study of how such impacts are assessed found that only seven of California's coastal power plants have even conducted entrainment studies using current, accepted scientific methods. *See* Cal. Energy Commission, Prepared by Moss Landing Marine Laboratories, *Understanding Entrainment at Coastal Power Plants: Informing a Program to Study Impacts and Their Reduction* ("*CEC Entrainment Study*") at 31 (2008).[9]

Both the State Water Board and the California Energy Commission have expressed concern over the

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Regional Water Boards also implement corresponding California state water protection laws.

[8] *Available at* http://www.waterboards.ca.gov/plans_policies/docs/coastal_estuarine/scope_doc031808.pdf.

[9] *Available at* http://www.energy.ca.gov/2007publications/CEC-500-2007-120/CEC-500-2007-120.PDF.

total number of fish killed by OTC power plants. In Southern California alone, fish mortality estimates range from 3.6 million fish per year for all 11 power plants in the region to 3.6 million fish per year just for the San Onofre Nuclear Generating Station. *Compare CEC 2007 Report, supra,* at 47 *with State Water Board Scoping Document, supra,* at 13. This mortality represents somewhere between 8 and 30 percent of the total catch from all recreational fishing activity in the Southern California study area. *CEC 2007 Report, supra,* at 47. While the raw numbers are themselves alarming, the discrepancy between them is even more troubling. Without significantly more accurate and verified fish mortality data, state permit writers cannot possibly understand fish mortality impacts or, by extension, begin to monetize them in a cost-benefit analysis.

We have even less data for plankton – tiny, drifting plants and animals that form the basis of marine food webs. While some monitoring studies measure certain fish larvae and, on occasion, some invertebrate larvae, the entrainment of many zooplankton (animal species) and virtually all phytoplankton (plant species) is simply uncounted. Yet, the loss of trillions of plankton unquestionably impairs ecosystem functioning. Marine phytoplankton account for over 99 percent of the primary energy production in marine ecosystems and play an essential role in transferring this energy up the food web to

larger animals.[10] Reductions in plankton abundance can, therefore, have cascading effects through marine food webs, as planktonic prey become scarcer, and such cascading effects have been a scientific concern in California for decades.[11] For this reason, the true effects of OTC systems on marine ecosystems – and the benefits of converting power plants to an alternative cooling system – cannot be measured without a much better understanding of how plankton are impacted.

Although OTC systems are indiscriminant killers, the effects on already-imperiled species are particularly problematic. *See CEC 2005 Report*, *supra*, at 32. Consider, for example, California abalone, which are an important part of the state's ecological and social heritage and are in serious decline. The white abalone is listed as endangered under federal law, the black abalone is proposed for listing, and the green and pink abalone are considered "species of concern."[12] Like many other marine species, abalone are broadcast spawners, meaning that they reproduce by casting eggs and sperm into

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[10] *See* MARK DENNY, HOW THE OCEAN WORKS: AN INTRODUCTION TO OCEANOGRAPHY, Princeton Univ. Press (2008) at 69-79, 124-28.

[11] *Id. See also* F. J.-P. Briand, *Effects of Power Plant Cooling Systems on Marine Phytoplankton*, 33 MARINE BIOLOGY 135, 143 (1975).

[12] 66 Fed. Reg. 29,046 (May 29, 2001) (white abalone); 73 Fed. Reg. 1,986 (Jan. 1, 2008) (black abalone); 69 Fed. Reg. 19,974, 19,977 (Apr. 15, 2004) (green and pink abalone).

the water where they are fertilized and develop into free-swimming larvae. These larvae will ultimately settle and become stationary adults. Abalone must maintain a sufficient density of spawning adults for reproduction to occur.[13] Abalone, like most marine larvae, are not strong swimmers, and thus depend on currents to move them toward favorable settlement locations.[14] But when abalone spawn near OTC plants, they are drawn by intake currents toward and into the plant, where they are unable to survive the extreme temperatures of the cooling process. In this way, OTC intake systems not only reduce the number of juvenile abalone, but also decrease the density of individuals near power plant intake structures and thereby have particularly detrimental impacts on future reproductive success and survival.

The abalone story is but one among many impacts from OTC plants that are not captured by current scientific monitoring and modeling. As scientists at the Moss Landing Marine Laboratories have explained: "Smaller larvae (other invertebrates)

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[13] *See* Alistair J. Hobday, Mia J. Tenger, & Peter L. Haaker, *Over-Exploitation of a Broadcast Spawning Marine Invertebrate: Decline of the White Abalone*, 10 REV. IN FISH BIOLOGY & FISHERIES 493, 494 (2001).

[14] Sebestián R. Rodriguez, F. Patricio Ojeda, & Nibalso C. Inestrosa, *Settlement of Benthic Marine Invertebrates*, 97 MARINE ECOLOGY PROG. SER. 193, 198 (1993).

typically cannot be identified with existing methods, even though their populations are likely effected [sic]. Planktonic invertebrates and phytoplankton are typically not sampled because of their excessively small sizes and the commonly held assumptions that their rapid growth and fast population turnover suggest that ecological impacts are unlikely, although this has not been studied." *CEC Entrainment Study*, *supra*, at 15. In the absence of even basic knowledge about how OTC systems affect the fundamental building blocks of marine ecosystems, any regulatory weighing of costs against benefits is more fiction than reality.

OTC plants also harm species at the other end of the size spectrum, including California harbor seals, elephant seals, and California sea lions, all of which are protected under the Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1423. After years of denying impacts to marine mammals, 13 coastal power plants in Central and Southern California applied this year for permits to "incidentally" harm or kill these species in their OTC systems. 73 Fed. Reg. 2,999 (Feb. 12, 2008). In doing so, the power plants conceded that seals and sea lions can become entrained in power plant intake structures and die of stress or suffocation before plant operators are able to release them. *Id.* In fact, the Marine Mammal Stranding Network, a group of scientists affiliated with the National Oceanic and Atmospheric Administration, estimates that 23 harbor seals died as a result of power plant

entrainment between 1999 and 2003 and that 21 sea lion were killed from entrainment in 2001 alone.[15] California estimates annual impingement of marine tetrapods (seals, sea lions, and sea turtles) at 57 animals, the vast majority of which are killed. *State Water Board Scoping Document*, *supra*, at 16.

In short, as the California Energy Commission staff explained in its recent report on OTC facilities: "Coastal power plants are partly responsible for ocean degradation. Recent studies required by the California Energy Commission and other State agencies have shown that coastal power plants that use seawater for once-through cooling are contributing to declining fisheries and the degradation of estuaries, bay[s] and coastal waters." *CEC 2005 Report, supra,* at 1.

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[15] *See*, National Marine Fisheries Service, *Harbor Seal (Phoca vitulina richardsi): California Stock* at 3 (2005); National Marine Fisheries Service, *California Sea Lion (Zalophus californianus californianus): U.S. Stock* at 3 (2003).

II. IN ATTEMPTING TO DEVELOP MORE ENVIRONMENTALLY PROTECTIVE STATEWIDE GUIDANCE FOR EXISTING OTC PLANTS, CALIFORNIA HAS CONCLUDED THAT COASTAL FACILITIES CAN UPGRADE TO ALTERNATIVE COOLING SYSTEMS WITHOUT SUBSTANTIALLY IMPAIRING ELECTRICITY GRID RELIABILITY.

A. California Is Developing a More Protective State Policy that Does Not Allow for Cost-Benefit Exemptions from Performance Standards.

Faced with the substantial environmental impacts caused by California's OTC fleet, several state agencies are pressing for greater ecological protection. For instance, after concluding that "California marine and estuarine environments are in decline and the once-through cooling systems of coastal power plants are contributing to the degradation of our coastal waters," the staff of the California Energy Commission recommended, among other things, that the Commission develop new siting policies and create incentives to promote alternative cooling systems. *CEC 2005 Report* at 1, 4-6. Soon thereafter, the California State Lands Commission, which exercises leasing jurisdiction over state tidelands, adopted a resolution recognizing that once-through cooling "significantly harms the environment by killing large numbers of fish and other wildlife, larvae and eggs, . . . by raising the temperature of the receiving

waters, and by killing and displacing wildlife and plant life." *Resolution by the California State Lands Commission Regarding Once-Through Cooling in California Power Plants* (Apr. 17, 2006).[16] Accordingly, the Lands Commission urged its sister agencies "to expeditiously develop and implement policies that eliminate the impacts of once-through cooling on the environment, from all new and existing power plants in California" and resolved not to approve or extend any tideland leases for power plants unless the plant complies with all state and federal requirements for minimizing the impacts of cooling water systems. *Id.* The California Ocean Protection Council quickly followed suit with a similar resolution acknowledging the "multiple types of undesirable and unacceptable environmental impacts associated with once-through cooling technology" and urging, among other things, that the State Water Board implement more stringent state standards to reduce impacts from power plant cooling systems. *Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters* (Apr. 20, 2006).[17]

Responding to this call for action, the State Water Board in June 2006 proposed new, more stringent statewide regulations for power plant cooling systems. Following EPA's suspension of the Phase II

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[16] *Available at* http//www.cacoastkeeper.org/assets/pdf/SLC_Resolution_OTC.pdf.

[17] *Available at* http://resources.ca.gov/copc/.

Rule in 2007, the State Water Board issued a revised draft statewide policy, the express intent of which is to "ensure that the beneficial uses of the State's coastal and estuarine waters are protected while also ensuring that the electrical power needs essential for the welfare of the citizens of the State are met." *State Water Board Scoping Document, supra*, at 83-91.[18] Similar to the federal Phase I Rule, California's draft policy provides for compliance via one of two "tracks." The default track requires a reduction in intake flow and velocity "at a minimum, to a level commensurate with that which can be attained by a closed-cycle cooling system." *Id.* at 84. Where the plant owner demonstrates that it is not feasible to comply with the first track, the draft policy requires compliance using operational or structural controls that reduce impingement mortality and entrainment of all stages of marine life by at least 90 percent of the reduction that would be achieved using a closed-cycle cooling system. *Id.* Significantly, the proposed California policy does not allow for any exemption from these standards based on the weighing of compliance costs against environmental benefits.

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[18] The draft state policy focuses on existing power plants because the State Water Board recognizes, for the reasons explained below, that no new power plants will be sited along the California coast. Due to market conditions and the age of the fleet, most or all existing coastal plants will be either repowered or mothballed over the next several years.

B. Inefficient Physical Plant and Market Forces Are Driving the OTC Fleet to Modernize and Repower, Providing an Ideal Opportunity to Upgrade these Sites to More Environmentally Sound Cooling Systems.

California's coastal OTC fleet is in the midst of modernizing, as plant owners gradually replace old generation facilities with more efficient combined-cycle generating capacity. This modernization trend provides the state with an important opportunity to increase power plant efficiency and move away from the use of OTC. Cal. Energy Commission, *Comments on SWRCB Scoping Document and Proposed Statewide Policy on Clean Water Act State Water Resources Control Board* at 7 (Sept. 26, 2006).[19] In fact, the Energy Commission has adopted an affirmative policy to encourage the orderly retirement of aging, inefficient coastal power plants and their replacement with modern, efficient combined-cycle or peaking facilities by the year 2012. *Id.* at 2. The California Ocean Protection Council similarly has concluded that "[r]epowering is of particular interest in California, where many of the coastal power plants 30 to 40 years old, or more, and are likely to be replaced with more efficient technologies in the coming years." *OPC Feasibility Study, supra,* at ES-1. In short, newer, more efficient generation capacity is coming

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[19] *Available at* http://www.energy.ca.gov/siting/documents/2006-09-25_LETTER_TO_SWRCB.PDF.

quickly in California, and much of it will be installed at existing OTC power plant sites as a result of state incentives that prioritize these coastal facilities for repowering. *See* Cal. Pub. Util. Code § 454.6.

Recent OTC plant repowering decisions illustrate that the economics of modernizing with an alternative cooling system are not prohibitive as long as appropriate regulatory incentives are in place. Since electricity market deregulation in the late 1990's, six large California coastal plants have applied to repower by retiring and replacing old steam boilers. *CEC 2007 Report*, *supra*, at 17. Five of these facilities (Moss Landing, Morro Bay, El Segundo, Huntington Beach, and Gateway) sought approval soon after the turn of the century, each proposing to use OTC for their new generating units. Following issuance of the Second Circuit's decision at issue here, the El Segundo and Gateway facilities sought to amend their licenses to switch to alternative cooling technologies. Having watched the Phase II Rule unfold in the courts, subsequent applicants for repowering have all proposed to use alternative cooling systems. *See id.* at 56-57. Thus, faced with a judicial interpretation of the Clean Water Act that does not allow for a cost-benefit exemption to national performance standards, aging California OTC plants have begun to move toward full compliance with Section 316(b)'s "best technology" requirement. In doing so, they are falling in line with new inland power plants that do not have

a ready source of free, cold water for cooling. *See id.* at 39 (noting that proposals to use air cooling for new power plants across the state increased significantly in 2006 and 2007).

Moreover, a detailed study prepared by technical consultants for the Ocean Protection Council and the State Water Board concluded that implementation of a more protective state policy without the cost-benefit loophole contained in the Phase II Rule would not significantly affect electricity grid reliability in California. The authors first explained that mass retirements of OTC plants in response to the proposed state rule are "highly unlikely" for several reasons:

> Older plant owners have many incentives for repowering, including provisions in state law and regulation that essentially give preference to repowered coastal plants in the utility power contracting process. They also have ready availability of natural gas and transmission infrastructure at the present site, and the efficiency improvement offered by new plant technologies will greatly improve their ability to compete with other resources.

Cal. Ocean Protection Council and State Water Resources Control Board, *Electric Grid Reliability Impacts from Once-Through Cooling in California*

("*Grid Reliability Study*") at 3-4 (2008).[20] Based on computer modeling, the authors then determined that the repowering of old steam plants and the conversion of combined-cycle plants to alternative cooling systems is cost-effective and, with proper planning and phasing of upgrades, can be achieved without significantly affecting reliability of the electricity grid. *Id.* at 4-5, 55-57.

A separate report prepared for the Ocean Protection Council reached a similar conclusion. That study examined the technical, logistical, and regulatory feasibility of converting the remaining active OTC plants along the California coast to closed-cycle wet recirculation cooling, concluding that such a conversion was feasible for all but 3 of these facilities,[21] where technical constraints may impede the use of cooling towers and require the installation of other technologies. *See OPC Feasibility Study*, *supra*, at ES-1 to ES-10. Cost modeling indicates that, at worst, the retrofitting of existing (unrepowered) facilities would add 1.13 cents per kilowatt hour to retail electricity rates. *Id.* at ES-9. Repowered facilities

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[20] *Available at* http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf.

[21] Although there are 21 OTC plants along the California coast, 3 of these have effectively stopped operating. Two of the remaining 18 facilities have already committed to closed-cycle cooling and one is preparing to close permanently for other reasons. Thus, the feasibility study focused on the remaining 15 active facilities.

would, of course, enjoy increased efficiencies and lower cost impacts.

Thus, while existing OTC plants play an important role in providing power to so-called "local reliability areas" along the California coast, these facilities can be converted to alternative cooling technologies without major economic dislocation or disruption of the electricity transmission system. Extensive study of this issue in California demonstrates that what is needed for an orderly conversion, as the OTC fleet inevitability modernizes to compete in the contemporary energy market, is proper planning and regulatory signals, not wholesale exemption from Section 316(b)'s best technology-based performance standards.

II. EPA'S ALLOWANCE OF SITE-SPECIFIC COST-BENEFIT EXEMPTIONS UNDERMINES THE INTENT OF SECTION 316(b) AND WILL SET BACK CALIFORNIA'S EFFORTS TO ENCOURAGE INSTALLATION OF AVAILABLE ALTERNATIVE COOLING TECHNOLOGY AS THE OTC FLEET MODERNIZES.

Recent regulatory developments – including importantly the Second Circuit's affirmation that cost-benefit exemptions from national performance standards are not available under Section 316(b) – have set the stage in California for precisely the kind of technological advances that Congress envisioned when it enacted the Clean Water Act. Yet, two of the

first repowering decisions for the state's aging coastal OTC fleet illustrate just how easily a site-specific cost-benefit exemption can be manipulated to avoid the installation of the best technology available even at entirely new generating facilities. Neither congressional intent nor public policy considerations support the creation of such a major hole in the statutory fabric.

A. Cost-Benefit Exemptions Not Only Are Unwarranted, But Also Send the Wrong Regulatory Signal to Existing Facilities Contemplating Necessary Upgrades.

As the D.C. Circuit has explained, "the most salient characteristic of [the Clean Water Act] statutory scheme, articulated time and again by its architects and embedded in the statutory language, is that it is technology-forcing." *Natural Resources Defense Council, Inc. v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987) (citing relevant legislative history). Indeed, "[t]he essential purpose" of the statute's "progressively more demanding technology-based standards was not only to stimulate but to press development of new, more efficient and effective technologies. This policy is expressed as a statutory mandate, not simply as a goal." *Id.* at 124. To effectuate this purpose, Congress expressly used the phrase "best technology available" in Section 316(b), just as it intentionally used similar language in other technology-forcing provisions of the statute, "to reflect the need to press

for increasingly higher levels of control." *See Tanner's Council of America, Inc. v. Train*, 540 F.2d 1188, 1195 (4th Cir. 1976).

In California, the use of site-specific cost-benefit exemptions will directly undermine the technology-forcing intent of Section 316(b). By bifurcating the Section 316(b) implementing regulations into distinct phases – a bifurcation that does not exist in the statute itself – and then broadly defining "existing facilities" to include brand new, more efficient generating capacity at existing power sites, EPA has virtually guaranteed that every single OTC replacement plant along the California coast will fall within the Phase II Rule and its provisions for a cost-benefit exemption, an exemption that is not available to "new facilities" under the Phase I Rule.[22] But the proffered

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[22] As EPA explained in the preamble of the final Phase II Rule, "existing facilities" are broadly defined to include "the addition of new generating units at the same site, even where they require[ ] an increase in cooling water intake structure design capacity or the construction of a new cooling water intake structure, *as well as the complete demolition of an existing facility and its replacement with a new facility*, so long as it [does] not increase the design capacity of the cooling water intake structure." 69 Fed. Reg. 41,576, 41,579 (July 9, 2004) (emphasis added). This definition stands in stark contrast to EPA's definition of "new source" under Sections 306 and 402 of the Clean Water Act: "[M]ajor modifications to existing facilities . . . would be 'new sources' in 40 CFR 122.29 as that term is used in the effluent guidelines and standards program." 66 Fed. Reg. 65,256. *See also* 40 C.F.R. § 122.29(b)(1); 122.22. High land values along the California coast ensure that no electric generating plants will be constructed on entirely new sites to serve

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public policy justification for reading a cost-benefit exemption into the law for existing facilities – higher retrofit costs – does not actually apply here.[23] Coastal replacement plants face essentially the same construction cost structure and the same market conditions as do new "greenfield"[24] facilities located elsewhere. If anything, coastal replacement plants are financially advantaged over their inland counterparts by both special state incentives for repowering and the

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these high population, high energy demand areas. Instead, all new coastal facilities will be constructed on existing power plant sites and will, therefore, be able to avail themselves of the "existing facility" classification.

[23] EPA invoked as its primary justification the potential for higher costs when retrofitting existing "Phase II" facilities, as compared to the construction of new "greenfield" facilities:

> [The Phase I rule] does not apply to existing facilities . . . [because] existing facilities might incur higher compliance costs than new facilities. For example, existing facilities might need to upgrade or modify existing intake structures and cooling water systems to meet requirements of the type contained in today's rule, which might impose greater costs than use of the same technologies at a new facility. Retrofitting technologies at an existing facility might also require shutdown periods during which the facility would lose both production and revenues, and certain retrofits could decrease the thermal efficiency of an electric generating facility.

66 Fed. Reg. 65,256 (Dec. 18, 2001).

[24] In describing the Section 316(b) regulations, EPA used the term "greenfield facility" to mean "a facility that is constructed at a site at which no other source is located or that totally replaces the process or production equipment at an existing facility," including the cooling water intake structure. 69 Fed. Reg. 41,576, 41,578 (July 9, 2004).

absence of new land purchase costs. Competing inland facilities, however, do not enjoy the public subsidy of free cooling water and, as a result, generally do not engage in the ecologically destructive practice of OTC. By reading a cost-benefit exemption into Section 316(b), EPA has adopted a regulatory policy that favors one set of plant operators over another and will perpetuate the use of outmoded cooling technology for generations to come, at the direct expense of California's dwindling fisheries and other public trust resources.

EPA's approach undercuts California's slow but steady progress toward the conversion of OTC facilities to alternative cooling technologies. Following electricity deregulation in California, the first several coastal power plants to complete the repowering approval process predated the Second Circuit's decision in this case and each received approval to utilize OTC. *Grid Reliability Study*, *supra*, at Table 1-1. As illustrated by the Moss Landing and Morro Bay examples below, these regulatory approvals relied, in large part, upon an agency determination that the economic costs of compliance outweighed the environmental benefits. Following issuance of the Second Circuit decision disallowing the use of cost-benefit analysis, the owners of the as-yet-unconstructed El Segundo and Gateway facilities sought to amend their regulatory approvals to permit the use of dry cooling technology instead of OTC. *Id.*; *CEC 2007 Report*, *supra*, at 56-57. Reversal of the Second Circuit decision by this Court will send a conflicting

signal to these and other facilities, cutting sharply against California's announced policy of converting OTC facilities to environmentally superior cooling technologies as they move through the repermitting and repowering process.

B. Recent Permitting Decisions in California Demonstrate that the Technology-Forcing Requirements of Section 316(b) Can Be Easily Circumvented Through the Application of Dubious Cost-Benefit Analysis.

The Moss Landing Power Plant approval process provides a window into how individual repower permit decisions are likely to implement the cost-benefit exemption contained in the Phase II Rule, if it is allowed to stand. In the first major repowering project at a coastal OTC plant, the Moss Landing facility sought to replace five inefficient operating units constructed in the 1950's with two new state-of-the-art combined-cycle natural gas-fired generating units, at an estimated capital cost of $475 million. Cal. Energy Commission, *Commission Decision on Application for Certification, Moss Landing Power Plant Project,* Docket No. 99-AFC-4 at 2 (Nov. 2000).[25] The Moss Landing plant is located at the mouth of

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[25] *Available at* http://www.energy.ca.gov/sitingcases/mosslanding/documents/index.html#commission.

Elkhorn Slough, an acknowledged "biological gem" that provides habitat for hundreds of bird, fish and invertebrate species and serves as an important nursery for the ecologically renowned Monterey Bay. Cal. Energy Commission, *Biological Resources Errata to Final Staff Assessment* ("*Biological Errata*") at 7 (June 19, 2000).[26] Operation of the plant's OTC system, which has the capacity to withdraw 1.224 billion gallons of water a day from the estuary, entrains roughly 28 percent of the slough's total water volume every single day and results in the destruction of all living matter contained therein. The resulting 13 percent continuous loss in biological productivity is considered to be ecologically "significant" by state agency biologists. *Id.* at 10-11.

In issuing a new Clean Water Act permit for the repowered Moss Landing facility, the Regional Water Board, as the delegated state permitting agency, employed a site-specific cost-benefit analysis to evaluate compliance with Section 316(b) and determined that an alternative closed-cycle cooling system for the new generating units would add $12-13 million to the cost of construction. *Voices of the Wetlands v. Cal. State Water Resources Control Board*, 69 Cal. Rptr. 2d 487, 524 n.7, 528 (2007), *rev. granted*, 74 Cal. Rptr. 3d 453 (2008). State regulators attempted to monetize the environmental benefits of such an

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[26] *Available at* http://www.energy.ca.gov/sitingcases/mosslanding/documents/index.html#commission.

alternative cooling system using a controversial "habitat equivalency" conversion method and arrived at an environmental benefit value of between $4.68 and $9.75 million. *See Biological Errata, supra*, at 13. Regional Water Board staff then utilized these monetary estimates to weigh the estimated incremental costs ($12 to $13 million) against the estimated incremental benefits ($4.68 to $9.75 million) and concluded that the cost of installing commercially-available alternative closed-cycle wet cooling technology was not justified by – in fact, in staff's view, was "wholly disproportionate" to – its environmental benefit. Thus, the Regional Board ultimately approved a new Clean Water Act permit that allowed the repowered facility units to be designed, constructed, and operated using an old-fashioned OTC system. Today, the Moss Landing facility stands as California's flagship natural gas-fired electric generating plant, running at significantly increased efficiency and generating substantial profits for its private owner, even as its highly damaging OTC system continues to degrade Elkhorn Slough and the public resources of Monterey Bay into the indefinite future.

A similar fate awaits the estuary just down the coast at Morro Bay. There, the plant owner has proposed – and the California Energy Commission has preliminarily approved – a repower project that will involve (1) the construction of an entirely new, modern combined-cycle generating facility adjacent to the existing plant and (2) the subsequent demolition of the existing structure. The sole connection between

the two parts of this repower project is a water intake pipe running from the old cement cooling water intake structure located on the public tidelands, across the site, to the newly constructed facility. *See* Cal. Energy Commission, *3rd Revised Presiding Member's Proposed Decision for Morro Bay Power Plant Project,* Docket No. 00-AFC-12 at 2 (June 2004).[27] Although the plant owner has elected to continue operating, for now, pursuant to a long-term administrative extension of its 1995 permit and has not yet sought final project approval from state regulators, the Regional Board has issued a draft Clean Water Act permit document that mimics the cost-benefit approach utilized for the Moss Landing facility. At Morro Bay, the Regional Board calculated a 33 percent larval loss from operating an OTC system at the new facility, on which it placed a monetary value of $28 million using the same dubious "habitat equivalency" approach employed at Moss Landing. *See* Cal. Regional Water Quality Control Board, *Draft Waste Discharge Requirements Order No. R3-2004-0023, NPDES Permit No. CA 0050610, Attachment 3*, at 2 (Dec. 2, 2004).[28] Because the least expensive alternative cooling water technology is estimated to cost $30 million, *id.* at 4,[29] the draft

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[27] *Available at* http://www.energy.ca.gov/sitingcases/morrobay/documents/index.html#commission.

[28] *Available at* http://www.swrcb.ca.gov/rwqcb3/Facilities/DukeEnergy/DukeMB.htm.

[29] The incremental cost of this alternative closed-cycle technology vis-a-vis once-through cooling technology is not

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permit proposes to allow the new facility to be designed and operated using an OTC system. *Id.* at 8.

These leading examples – and undoubtedly there will be more to follow if the Second Circuit decision is reversed – demonstrate how state permit writers will interpret and implement the Phase II cost-benefit exemption as California's power industry moves to modernize and repower its highly inefficient OTC fleet over the next several years. Despite a perfect market opportunity to install the best cooling technology available as part of the massive power plant modernization effort along California's ecologically embattled coastline, plant owners may use the regulatory loophole of site-specific cost-benefit exemptions to circumvent national technology standards. The result could well be a series of new, more efficient and more profitable electric generating units that nonetheless employ outmoded cooling water systems which are significantly less protective than the "best technology available" on the market, further jeopardizing the living marine resources that undergird California's vast coastal economy. Because EPA has already taken account of cost-effectiveness in setting uniform performance standards, there is no legitimate policy rationale for permit writing agencies or the Court to override the clear intent of Congress by allowing such

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disclosed in the Regional Water Board documents, but it obviously is less than $30 million and more likely on the order of the $12 to $13 million incremental cost estimate at sister facility Moss Landing.

upgraded or newly constructed facilities to evade the installation of commercially available, environmentally superior cooling system technologies.

CONCLUSION

For the foregoing reasons, and the reasons set forth in Respondents' and other supporting *amicus* briefs, the decision of the Second Circuit in this case should be affirmed.

Dated: October 6, 2008 Respectfully submitted,

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